

INTRODUCTION

Thank you for purchasing the SHARP Scientific Calculator Model EL-520X.

About the calculation examples (including some formulas and answers), refer to the reverse side of this English manual. Refer to the number on the right of each example in the manual for use. After reading this manual, store it in a convenient location for future reference.

Operational Notes

- Do not carry the calculator around in your back pocket, as it may break when you sit down. The display is made of glass and is particularly fragile.
- Keep the calculator away from extreme heat such as a car or heater, and avoid exposing it to excess humidity or dust.
- Since this product is not waterproof, do not use it in or near water. When using, avoid splashing on it. Beverages, water, sweat, urine, coffee, steam, perspiration, etc. will also cause malfunction.
- Clean with a soft, dry cloth. Do not use solvents or a wet cloth.
- Avoid using a rough cloth or anything else that may cause scratches.
- Do not drop or apply excessive force.
- Never dispose of batteries in a fire.
- Keep batteries out of the reach of children.
- This product, including accessories, may change due to up-grading without prior notice.

NOTICE

- SHARP strongly recommends that replace permanent memory records be kept of all important data. Data may be lost or altered in virtually any electronic memory product under certain circumstances. Therefore, SHARP assumes no responsibility for data lost or otherwise rendered unusable whether as a result of improper use, repairs, defects, battery replacement, or use after the specified battery life has expired, or any other cause.
- SHARP will not be liable nor responsible for any accidental or consequential economic or property damage caused by misuse and/or malfunctions of this product and its peripherals, unless such liability is acknowledged by law.

- Press the RESET switch (on the back), with the tip of a ball-point pen or similar pointed object, to reset the calculator. Do not use an object with a breakable or sharp tip. Note that pressing of the RESET switch erases all data stored in memory.
- After replacing the batteries.
- To clear all memory contents.
- When an abnormal condition or error occurs and all keys are inoperative. If service should be required on this calculator, or if SHARP service dealer, SHARP approved service facility, or SHARP representative is contacted.

Hard Case



DISPLAY

Equation = Display

1234567890. = Symbol

Mathematical Expression

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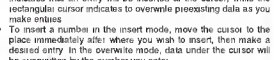
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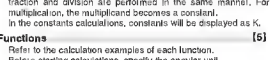
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EL-520X

**CALCULATION EXAMPLES
ANWENDUNGSBEISPIELE
EXEMPLES DE CALCUL
EJEMPLOS DE CÁLCULO
EXEMPLOS DE CÁLCULO**

ESEMPLI DI CALCOLO
REKENVOORBEELDEN
PÉLDASZÁMÍTÁSOK
PŘÍKLADY VÝPOČTŮ
RÄKNEESEMPLER
LASKENTAESIMERKKEJÄ
ПРИМЕРЫ ВЫЧИСЛЕНИЙ
UDREGNINGSEKSEMPLER
ตัวอย่างการคำนวณ
نماذج الحسابات

计算例子
CONTOH-CONTOH PENGHITUNGAN
CONTOH-CONTOH PERHITUNGAN

Figure 1 shows a sequence of four screenshots from a TI-84 Plus calculator. The first screenshot shows the input of side lengths 45 and 25, and the selection of the angle 40 degrees. The second screenshot shows the calculation of the area using the formula $\frac{1}{2} \times \text{base} \times \text{height}$, resulting in 1700. The third screenshot shows the calculation of the area using the formula $\frac{1}{2} \times \text{side1} \times \text{side2} \times \sin(\text{angle})$, resulting in 2720. The fourth screenshot shows the final result of the calculation, 2720, displayed on the screen.

[26] (MODE) (QUAD, CUBIC)



$3x^3 + 4x - 95 = 0$
 $x = ?$
 $x^2 = ?$





MODE $\left[\frac{1}{x} \right] \left[\frac{1}{x} \right]$
 3 $\left[\text{ENT} \right] 4 \left[\text{ENT} \right] \left[\div \right] 95$ **5.**
 $\left[\text{ENT} \right]$ **-6.333333333**
 $\left[\text{ENT} \right] \left[\text{ENT} \right]$




$5x^3 + 4x^2 + 3x + 7 = 0$
 $x = ?$
 $x^2 = ?$
 $x^3 = ?$





MODE $\left[\frac{1}{x} \right] \left[\frac{1}{x} \right] \left[\frac{1}{x} \right]$
 5 $\left[\text{ENT} \right] 4 \left[\text{ENT} \right] 3 \left[\text{ENT} \right] 7$
 $\left[\text{ENT} \right]$
 $\left[\text{ENT} \right]$
 $\left[\text{ENT} \right] \left[\text{ENT} \right]$
 $\left[\text{ENT} \right]$




-1.233600307
0.21680153
1.043078228
0.21680153
1.043078228


[6]  




$d(x^4 - 0.5x^3 + 6x^2)$    y^x $\frac{1}{x}$ $=$ 0.5 






$x=2$  $\frac{1}{x}$ \div 6   $\frac{1}{x^3}$





$dx=0.00002$   2  

$x=3$  3  0.001 

$dx=0.001$ 

$\int_2^3 (x^4 - 5)dx$    $\frac{1}{x^5}$ $=$ 5

$n=100$  10  2  8  

$n=10$   1  0 

130.50000

[illegible]

$\frac{1}{2} \log$	$\bullet y < 0 \quad x = 2n-1$ $\bullet 0 < x < 1 \quad \frac{1}{2} = n, n \neq 0^+$ $-10^{10} < \frac{1}{2} \log y < 100$
a^b	$-10^{100} < x \leq 230 \ 2585092$
10^x	$-10^{100} < x < 100$
$\sinh x, \cosh x,$ $\tanh x$	$ x \leq 230 \ 2585092$
$\sinh^2 x$	$ x < 10^{10}$
$\cosh^2 x$	$1 < x < 10^{10}$
$\tanh^2 x$	$ x < 1$
x^2	$ x < 10^{10}$
x^3	$ x < 2.15443469 \times 10^{10}$
\sqrt{x}	$0 < x < 10^{100}$
x^{-1}	$0 < x < 10^{100} \ (x \neq 0)$

$$\frac{4}{A} = \frac{4 \left(\frac{32}{2} \frac{64\pi^2 A}{A} \right) \left(\frac{A}{A} \right) \left(\frac{A}{A} \right)}{1.25 + \frac{2}{5} = [8 \text{ XXX}] \quad 1.25 \left(\frac{+}{+} \right) 2 \left(\frac{+}{+} \right) 5 \left(\frac{+}{+} \right) = 1.6}$$

$$\rightarrow \frac{4}{A} \frac{6}{A} \frac{1}{A} \quad \frac{1}{A^2} \quad 1.7, 1.8$$

$$^* 4, 5, 6 = 4 \frac{5}{6}$$

(11) [BIN] [PEN] [OCT] [HEX] [DEC] [NEG] [NOT] [AND] [OR]
[XOR] [XNOR]

[illegible]

'n, r integer / ganze Zahlen / *entire* / *entero* / *intiero* / *intero* /
geheel getal / egész számok / celý číslo / halál /
közösségek / *gemeins* / *halál* / *հայրենի* / *عالم* / 世界 /
integer / bilangan bulat

10 $\frac{1}{10}$ 1 0 0 1'000

[17] MOD SET UP

S=9=ANS
ANS \times 9= 0.6
FDX, TAB=1] 5.4

(DNC) SET UP 1 0 SET UP 2 1
5 9 = 0.6
 \times 9 = \times^{+1} 5.4

5 9 = (DNC) MOD 0.6
 \times 9 = \times^{+2} 5.4

For Europe only

SHARP ELECTRONICS (Europe) GmbH Sonnenstraße 3, D-20097 Hamburg
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For Australia / New Zealand only :
For warranty Information please see www.sharp.net.au

Physikalischen Konstanten und metrische Umrechnungen sind in den Tabellen aufgeführt.

Les constantes physiques et les conversions des unités sont indiquées sur les tableaux.

Los constantes físicas y conversiones métricas son mostradas en las tablas.

Constanti fisice e Conversões Métricas estão mostradas nas tabelas.

Les constantes physiques et les conversions des unités de mesure vengono mostrate nelle tabelle.

De natuurconstanten en metrische omrekeningen staan in de tabellen.

A fizikai konstansok és a mértékes átváltások a táblázatokban találhatók.

Физические константы и переводы до метрической системы выведены в таблице.

Fizikális konstánok és metrikai átváltmérések vannak a táblákban.

Фізичні константи та перетворення одиниць вимірювання наведені в таблицях.

Физическите константи и метрическите преобразувания са показани в таблиците.

Устойчивосте и метрическите превръзки са дадени в таблиците.

ثوابت الفيزياء والتحويلات المترية مذكورة في الجداول.

	$\frac{1}{\text{RCL}}$	$\frac{1}{\text{E}}$	-0.76025945
	$\frac{1}{\text{RCL}}$	$\frac{1}{\text{E}}$	0.503333405
$x=10 \rightarrow y'=?$	10	$\frac{1}{\text{RCL}}$	$\frac{1}{\text{E}}$
			24.488015
$y=22 \rightarrow x'=?$	22	$\frac{1}{\text{RCL}}$	$\frac{1}{\text{E}}$
			9.6320140
	$\frac{1}{\text{RCL}}$	$\frac{1}{\text{E}}$	$\frac{1}{\text{E}}$
			-3.43277202
	$\frac{1}{\text{RCL}}$	$\frac{1}{\text{E}}$	$\frac{1}{\text{E}}$
			9.6320140

[21] DATA \blacktriangle \blacktriangledown

\square DATA \square

PHYSICAL CONSTANTS			UNIT	1	2	3	4	5
90	SYMBOL	UNIT	SYMBOL	UNIT	SYMBOL	UNIT	SYMBOL	UNIT
91	c	m s ⁻¹	10^{-10}	J T ⁻¹	37.4	V	J	
92	G	m ³ kg ⁻¹ s ⁻²	19	MJ	T	J	38	K
93	p_0	m s ⁻¹	21	J	T	J	39	ÅU
94	μ_0	J A ⁻² m	22	MJ	T	J	40	ÅU
95	m_e	kg	23	MJ	T	J	41	ÅU
96	m_H	kg	24	MJ	T	J	42	Å
97	m_H	kg	25	L	m	43	Å	J
98	h	kg	26	L	m	44	Å	J
99	C	J K ⁻¹ mol ⁻¹	27	MJ	T	J	45	ÅU
100	k	J s	28	L	m	46	ÅU	
101	J	K ⁻¹	29	V	m	47	ÅU	mol ⁻¹
102	N_A	mol ⁻¹	30	R	J mol ⁻¹ K ⁻¹	48	L	m
103	E	F m ⁻¹	31	F	C mol ⁻¹	49	ÅU	W m ⁻¹
104	ϵ_0	C ² J ⁻¹ m ⁻¹	32	ÅU	Q m	50	ÅU	ÅU
105	α	°	33	ÅU	C	51	ÅU	ÅU
106	t	m	34	ÅU	m s ⁻¹	52	ÅU	Pa
107	R	m	35	ÅU	s ⁻¹ T ⁻¹	53	ÅU	ÅU
108	Φ	V	36	K	Hz V	54	ÅU	ÅU

1	m-xcm	16	kg-ab	31	J- <u>sc</u> alm
2	cm-n	17	*F-u* <u>C</u>	32	caln- <u>h</u>
3	h-m	18	*C*-f <u>A</u>	33	hp-w <u>W</u>
4	m- <u>ft</u>	19	gal (US)- <u>f</u>	34	W-h <u>p</u>
5	yd-m	20	-l-gal (US)	35	ps-w <u>W</u>
6	m- <u>yd</u>	21	gal (UK)- <u>f</u>	36	W- <u>ps</u>
7	mile-km	22	-l-gal (UK)	37	kg/(cm ²)- <u>Pa</u>
8	cm-m <u>fe</u>	23	fl oz (US)- <u>m</u>	38	Pa-kg/(cm ²)- <u>Pa</u>
9	n mile-m	24	m ³ -fl oz (US)	39	g/m-m <u>Pa</u>
10	m-n mile	25	fl oz (UK)- <u>m</u>	40	Pa-satm
11	acre-m <u>2</u>	26	m ³ -fl oz (UK)	41	mmHg-l <u>Pa</u>
12	m ² -acre	27	J- <u>cal</u>	42	Pa-mmHg
13	oz-g	28	cal- <u>J</u>	43	kgf-m- <u>l</u>
14	g-oz	29	g- <u>kg</u>	44	l/m ³ - <u>l</u>